

# INDIVIDUAL ACTIVITY CHANGE IN RESPONSE TO POOR AIR QUALITY

**Ellen M. Wells**, *Case Western Reserve University, Cleveland, United States*  
**Dorr G. Dearborn**, *Case Western Reserve University, Cleveland, United States*  
**Leila W. Jackson**, *Case Western Reserve University, Cleveland, United States*

**Background and Aims:** In the United States, several public health initiatives inform the general public about potential hazards of outdoor air pollution. Using National Health and Nutrition Examination Survey (NHANES) data, our aim was to evaluate the prevalence and characteristics of individuals who changed activities due to poor air quality.

**Methods:** This cross-sectional analysis included 5867 participants 16 years and older in NHANES 2007-2008 who were asked whether they changed activities in the past 12 months due to "bad" air quality. Descriptive statistics and logistic regression models including age, gender, race/ethnicity, smoking status, self-reported physical activity, and self-reported respiratory (asthma, emphysema, or chronic bronchitis) or cardiovascular (congestive heart failure, coronary heart disease, angina, heart attack, or stroke) conditions were evaluated using appropriate survey sample weights. Education, socioeconomic status, and body mass index were also considered.

**Results:** N=709 participants (12.3%, 95% confidence interval (CI): 10.4, 14.3) reported changing behavior in the past 12 months due to poor air quality. Based on an adjusted logistic model, older participants ( $\geq 45$  years) and women were significantly more likely to change their activities. However, younger participants ( $<25$  years), those reporting less physical activity, and smokers were significantly less likely to change their activities. Those with any respiratory condition (adjusted OR: 2.65, 95% CI: 2.01, 3.48) were also more likely to have changed activities. There was no association between those with any cardiovascular condition and activity change. Among those who changed activities, the most frequent change was spending less time outdoors (66.6%), whereas the least frequent was using public transportation (1.2%).

**Conclusions:** We present evidence that some individuals, including those with respiratory disease, reported changing activities in response to poor air quality. Public health initiatives should continue efforts to reach a broader population, particularly those with cardiovascular conditions.